

REMARKS

Claims 1, 2, 3, 4, 16, 17, 18, 19, 20, and 32 have been amended. No claims have been canceled or added. Accordingly, after entry of this Amendment, claims 1-32 will remain pending. It is noted that claims 1 and 17 are now presented in independent form.

In the Office Action dated December 24, 2003, the Examiner rejected claims 1 and 17 under 35 U.S.C. § 112, second paragraph, as indefinite for failing to particularly point out and distinctly claim the subject matter that the Applicants regard as the invention. In response, while respectfully disagreeing with the rejection, the Applicants have amended claims 1 and 17 to replace the conjunctive “and” with the disjunctive “or,” thereby mooted the rejection. Accordingly, the Applicants respectfully request that the Examiner withdraw this rejection of claims 1 and 17. It is noted that claims 4 and 20, as discussed in greater detail below, have been similarly amended.

In the Office Action, the Examiner indicated claims 4-16 and 20-32 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 4 and 20 have been so amended. In addition, claims 2, 3, and 16, have been amended to depend from claim 4, and claims 18, 19, and 32 have been amended to depend from claim 20. As a result, the Applicants respectfully submit that claims 2-16 and 18-32 are now in condition for allowance.

With respect to claims 2-16 and 18-32, the Applicants respectfully submit that the claims present the same subject matter as originally presented. Accordingly, while claims 2, 3, 4, 16, 18, 19, 20, and 32 have been amended, the amendments do not present subject matter that would result in a narrow interpretation under the doctrine of equivalents. To the contrary, since the amendments presented herein merely alter the claims so that they now stand in condition for allowance, the Applicants respectfully submit that the claims are entitled to a full range of equivalents as if presented in this form *ab initio*.

In the Office Action, the Examiner rejected claims 1-3 and 17-19 under 35 U.S.C. § 102(b) as anticipated by Woolson (U.S. Patent No. 1,884,480). The Applicants respectfully disagree and, therefore, respectfully traverse the Examiner's rejection. Since the dependency of claims 2, 3, 16, 18, 19, and 32 has been changed so that these claims now depend from claims 4 and 20, the Applicants address only claims 1 and 17 below.

Claims 1 and 17 have been amended to recite an aircraft drive unit (or an aircraft comprising an aircraft drive unit) that combines a number of elements including, among others, an air propeller and a transmission comprising a reduction gearing. Woolson and the other references of record fail to describe or suggest at least this combination of elements and, as a result, cannot be relied upon, either alone or in combination, to anticipate or render obvious claims 1 and 17. Accordingly, claims 1 and 17 are patentable over Woolson and the other references of record.

The Applicants respectfully point out that Woolson does not relate to an aircraft drive unit and, therefore, fails to reveal the characteristic, constituent parts of such a drive unit. In contrast, Woolson describes an internal combustion engine adapted for use with marine engines. (Woolson at page 1, lines 1-6.) The Applicants respectfully submit that those skilled in the art would readily appreciate that the design of an air propeller, as claimed, is different than a ship propeller, as disclosed by Woolson. Therefore, those skilled in the art would not rely for guidance on the teachings associated with marine drive units when designing an aircraft drive unit.

Those of ordinary skill in the aircraft drive unit art would not have considered prior art directed to ship drive units, because ship drive units obey different design and operational characteristics. Ship drive units normally include large displacement engines having large overall dimensions. Aircraft drive units, on the other hand, utilize highly-sophisticated engines, optimized with regard to compact, lightweight dimensions. In addition, ship drive units normally

incorporate diesel engines, which produce a significant amount of vibrations. Aircraft drive units, on the other hand, explicitly incorporate engines producing considerably low amounts of vibration. Therefore, taking into account these considerations, among others, those skilled in the art would have dismissed the design and operational considerations for a boat diesel drive unit, as disclosed in Woolson, when developing an aircraft drive, such as the one described by the present application. The Applicants, therefore, respectfully submit that the Examiner's consideration of boat drive units appears to be an attempt to apply hindsight to the claimed combination. This is improper.

In addition, a close examination of Woolson reveals that the reference fails to recite many of the features recited by claims 1 and 17. For example, the Applicants respectfully direct the Examiner's attention to reference number 42, which is not a torsion bar, as asserted by the Examiner. Instead, reference number 42 is a clutch hub, which is distinctly unlike a torsion bar. Furthermore, the asserted transmission (Woolson at page 2, lines 83-104) appears to be a clutch for coupling the crankshaft to the ship's propeller shaft. Finally, the asserted vibration dampers (28, 31, 43, 46) are nothing more than friction clutches, which operate via a breakaway torque. As such, at high torque, the friction clutches decouple. At low torque, the friction clutches provide a more or less rigid connection. Hence, there appears to be no mechanism by which substantial damping of torsional vibrations may be achieved.

The Applicants respectfully submit that aircraft drive units are subject to strict safety regulations. In contrast to a ship drive unit, almost any failure of an aircraft drive unit may result in an engine dysfunction that may present a hazardous operational situation. As would be appreciated by those skilled in the art, engine vibrations created by an aircraft's drive unit may severely impact on the reliability and safety of the aircraft drive unit and the aircraft that incorporates it.

In recent years, aircraft drive units have become increasingly complex, resulting in a need for reliable and efficient torsional vibration dampening systems. In particular, as the number of parts comprising an aircraft drive unit increases, the number different resonance-phenomena associated with those parts also increases. In the past, the air propeller was directly mounted on the engine crankshaft. Today, however, reduction gearings typically are employed to reduce the revolution speed of the crankshaft. Reduction gearings, however, add additional parts that introduce additional sources of vibration, increasing the need for torsional vibration dampers.

Among other reasons, by positioning a torsion bar between the first end of the crankshaft and the transmission and by positioning a torsional vibration damper at one of the first or the second ends of the crankshaft, the inventors were able to make the quantum jump from the traditional ship drive unit to the design of an aircraft drive unit. As a result, for these reasons, among others, the Applicants respectfully submit that the prior art cannot be relied upon properly to anticipate or render obvious the claimed invention. Accordingly, the Applicants respectfully submit that claims 1 and 17 are patentable over the references cited by the Examiner.

All rejections and objections have been addressed. It is respectfully submitted that the present application is now in condition for allowance, and notice to that effect is earnestly solicited.

Should there be any questions or concerns regarding this application, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,

Pillsbury Winthrop LLP

By: _____

A handwritten signature in black ink, appearing to read "Jeffrey D. Karceski", is written over a horizontal line. The signature is stylized with a large, sweeping initial 'J' and a long horizontal stroke extending to the right.

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